appear for the spectroscopic binary p *Velorum*, the elements of whose orbit have been derived by the writer[2], from plates obtained at the D. O. Mills Observatory, Santiago, Chile. Five out of the six show fairly satisfactory agreement with the computed velocities. The value given for the plate of 1909 February 22nd could not be fitted to the velocity curve. In answer to a letter calling attention to this one discordant observation, Dr. Lunt replied that a mistake in sign had occurred in reducing the measure of this plate with the Hartmann spectrocomparator and this had resulted in giving +16.6 km./sec. as published, instead of the correct value, −39.0 km./sec. In the following table will be found the dates, velocities, phases and residuals for the six spectrograms referred to. Dr. Lunt derives a systematic correction +0.5 km./sec., in the sense Chile *minus* Cape, and this has been allowed for in the residuals O-C, but has not been applied to the velocities themselves.

TABLE

OBSERVATIONS OF THE RADIAL VELOCITY OF p VELORUM
ROYAL OBSERVATORY, CAPE OF GOOD HOPE

Date	G.M.T. h	m	Phase d	Velocity km./sec.	O-C km./sec.
1909 Feb. 22	12	8	0.36	−39.0	−8.2
1915 Mar. 5	7	57	6.83	+39.8	+6.3
25	8	15	6.42	+39.9	+4.6
31	9	30	2.26	+32.5	+3.4
1916 May 1	7	11	0.94	+2.5	−0.1
May 20	6	8	9.68	−27.1	−1.4

Except for the first one the residuals fall within the range of values found for the observations from which the elements were derived. The time of mid-exposure for this discrepant plate is so close to the time of periastrom passage that some uncertainty may reasonably be expected in an orbit with so large an eccentricity (0.54), because of slight inaccuracies in the elements and because the rapid change in velocity at this time may render the measurement of the spectral lines considerably less accurate. Hence its somewhat larger residual need not be a matter of surprise.

R. F. SANFORD.

TWELVE NEW PLANETARY NEBULAE

The following new planetary nebulae were found on plates taken with a 10-inch Cooke Astrographic Lens, 45-inch focus, with ob-

[2] *L. O. B.* 9, 181, 1918.

jective prisms attached, and have been checked by observations with the large reflectors. Half of those listed are known nebulae. The criteria applied in such cases are as follows: (1) Predominantly bright-line spectrum, (2) symmetrical form, (3) about a central star, (4) well defined border. The last two items are questionable in the case of N.G.C. 2818, and the last in I.C. 1470, but the appearance of both these nebulae on direct photographs made with the 100-inch and 60-inch reflectors approximates the planetary more closely than any other recognized nebular form. I.C. 1470 and N.G.C. 7635 may possibly be transition forms between planetaries and diffuse gaseous nebulae.

Six of the objects have not previously been listed as nebulae. These are all small, rather faint nebulae in which central stars could not be seen with the large reflectors. Positions are given for 1920. Photographic magnitudes are estimated for central stars or, in the case of small objects in which no stars can be seen, a magnitude is given in brackets for the nebula as a whole. Measured photovisual magnitudes are given for Nos. 10 and 11.

Two New Planetary Nebulae

Two objects have been identified as planetary nebulae from spectrograms made with the 10-inch Cooke telescope and 6° objective prism.

No.	R.A. 1920	Dec. 1920	Size	Mag.	Bright Lines	Date of Observation
1	$0^h23^m.9$	$+55°28'$	$5''$	13.0	N_1, N_2 about equal	1920 Nov. 9
2	21 29 .9	+39 16	$5''$	12.5	$N_1(5)$, $N_2(1)$, $H\beta(3)$, $H\gamma(2)$	1920 Oct. 11

Mr. Hubble observed both objects visually with the 60-inch reflector on December 9, 1920. Each appeared as a small disk about $5''$ in diameter, the first being irregular in outline, the second nearly circular.

M. L. Humason.

The Leading Features of the Electric Furnace Spectrum of Scandium

In this study, about 300 lines of scandium, between λ3000 and λ6600, were photographed at various temperatures of the electric